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ter to the margin of the leaves of the same species." With regard to the Firs, the anatomical points of most importance are; the resin ducts of which there are always two in the Abies leaf, readily seen in a horizontal section; the presence or absence of stomata on the upper surface; and the presence, distribution and relative size of the hypoderm cells—robust longitudinal cells, with thick walls and a very slender cavity, almost always present on the edges and keel of the leaf and often forming a stratum on the upper side. These cells seem to form the most certain distinction between A. Fraseri, Pursh, of the high mountains of North Carolina, our A. balsamea, Marshal, and A. subalpina, Engelmann; the first having an almost uninterrupted stratum of hypodermic cells on the upper side of the leaf; the second scarcely any; and the third, which is the western representative of *balsamea*, more abundant cells above than under it, and crowded on edges and keel. The next four species have the resin ducts close to the epidermis of the lower side, towards the edges. A. grandis, Douglas, and A. concolor, Engelmann have the hypoderm cells in interrupted strata under the upper surface of the leaf; A. religiosa, H. B. K., and A. bracteata, Don, in a continuous layer. A. grandis has no stomata above, A. concolor has. A. bracteata has glabrous scales, and may thus be distinguished from the Mexican A. religosa and all other firs. The 8th and 9th species have the resin ducts, like the last four, close to the epidermis of the lower side, and in fertile branches equidistant from the edges and keel, but it is questioned whether 8, A. nobilis, Douglas, and 9. A. magnifca, Murray, are really distinct; Dr. Engelmann, inclines to think they are; Drs. Hooker and Gray, that they are not. In giving this diagnosis we have omitted all the other distinctions of more service in determining the trees when met with, as we wished to give an idea of these crucial anatomical points in the case of doubtful specimens, and we have not perhaps done justice even to these. After all it is very difficult to tie nature down to logical exactness. We see in Nature, Ap. 18th, that Mr. J. Gorham, in a paper read before the Linnean Society undertakes to detect the genus of an umbelliferous plant from an examination of the venation of the merest fragment. We wish we had room to extract some more graphic parts of the description of these noble trees.

§ 236. **Opuntia Ficus-Indica, DC.**—I have received from Dr. C. H. F. Peters, of the Hamilton College Observatory, the following note, commenting on my note in the BULLETIN lately. He was "reminded of the hedges in Sicily and of the impenetrable cactus fields on the lavas of Mt. Etna. It is the plant first of all used to break down the lava beds. A handful of soil is put down, and a cactus joint (or leaf) thrown upon it. That soon takes root, and the rock weathers very fast. So that, after a few years, as the second plant for aiding in making vegetable soil, fig trees are set out. I liked the fruit of the catcus very much."

You may remember that Dr. Peters made the first thorough survey of Mt. Etna, before 1840, at the expense of some German duchy. His survey is quoted in Humboldt's Cosmos. I. H. H.

§ 237. **Rediscovery of a lost Sphaeria.**—On returning from a botanical excursion in the dusk of the evening, one day last February, I picked up near Vineland, on a piece of the cast off bark of a dead maple, what in the uncertain light I took to be a Cyphella or some similar fungus, but which, on a more careful examination at home, turned out to be a *Sphaeria*, agreeing so well with the characters of *S. barbirostris*, Duf., that I was led to believe it to be in reality that species; though, in the absence of any account of the fructification in the description, the question of identity could not of course, be decided with certainty. I concluded, therefore, as the species was originally found in France, to send a specimen for identification to Dr. M. Cornu. Most fortunately, this gentleman happened to have in his possession a small, but authentic specimen, collected by Dufour himself in the year 1832. On a careful comparison, M. Cornu gave it as his opinion, that my fungus was the veritable *Sphaeria barbirostris* of Dufour, which has never before been found since its first discovery in the department of Landes, over forty years ago. In M. Cornu's specimen the perithecia are on the bare wood of oak; in the Vineland specimen they are on the inner surface, and between the loosened laminae of the maple bark—at first buried in the bark, which is soon pierced and thickly studded with the ostiola, which, again, are beset with a thick growth of short yellowish-brown horizontally spreading hairs. The ostiola were in some cases nearly $\frac{1}{4}$ of an inch long, but mostly about half that length. The asci are cladate-cylindric, and about .002′ long—sporidia oblong-cylindric, hyaline, and mostly about .0003′ long, by about half as wide.

It may be noted here that *Peziza hypnicola*, (Vol. 6, p. 134, Bull. Torr. Club), turns out to be a Lichen—Gyalecta.

Newfield, N. J., May 16, 1878. J. B. Ellis.

§ 238. **Lygodium palmatum. Southern localities.**—To the specification on p. 221, I am enabled to add the following:

1st. Transylvania Co., N. C., on the table land of the Blue Ridge, on the road from Buck Forest Hotel to Cæsar's Head, a few miles north of the State line. Here it was seen (growing abundantly in the copses by the way-side,) by Dr. Gray, Dr. Engelmann, Mr. Canby and myself in Sept., 1876.

2d. Rockcastle Co., Ky., about 100 miles S. E. from Louisville. In the mountains of this county Mr. John Williamson has recently found a new locality where "a cliff 25 or 50 feet high, and about 200 yards in length is literally overgrown with this fern, every available shrub or bush forming a support for it to twine upon." Mr. Williamson, in his work upon the Ferns of Kentucky, now in progress, will doubtless give us full details concerning this and other interesting fern localities of that State.

May 16, 1878. John H. Redfield.

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